

AMENDMENTS TO THE CLAIMS

1-24. (Canceled).

25. (Currently Amended) A mutant α -amylase obtained by introducing ~~at least one~~ a mutation into SEQ ID NO:1,

wherein said ~~at least one~~ mutation consists of:

the substitution of an amino acid residue selected from the group consisting of: the 11th Tyr, 16th Glu, 49th Asn, 84th Glu, ~~107th Met~~, 144th Ser, 167th Gln, 169th Tyr, 178th Ala, 188th Glu, 190th Asn, 205th His and 209th Gln, with another amino acid, and optionally an additional substitution of an amino acid residue at 107th Met with another amino acid residue.

26. (Currently Amended) The mutant α -amylase according to claim 25 or claim 47, wherein the 11th Tyr of SEQ ID NO:1 is substituted with Phe, the 16th Glu of SEQ ID NO:1 is substituted with Pro, the 49th Asn of SEQ ID NO:1 is substituted with Ser, the 84th Glu of SEQ ID NO:1 is substituted with Gln, the 144th Ser of SEQ ID NO:1 is substituted with Pro, the 167th Gln of SEQ ID NO:1 is substituted with Glu, the 169th Tyr of SEQ ID NO:1 is substituted with Lys, the 178th Ala of SEQ ID NO:1 is substituted with Gln, the 188th Glu of SEQ ID NO:1 is substituted Asp, the 190th Asn of SEQ ID NO:1 is substituted with Phe, the 205th His of SEQ ID NO:1 is substituted with Arg, and the 209th Gln of SEQ ID NO:1 is substituted with Val.

27. (Currently Amended) A mutant α -amylase obtained by introducing a mutation into SEQ ID NO:1,

and wherein said mutation consists of:

substituting ~~an amino~~ N-amino terminal sequence from 1st Asp through 19th Gly of SEQ ID NO:1 with an amino acid sequence from 1st His to 21st Gly of SEQ ID NO:2.

28-29. (Canceled).

30. (Currently Amended) A mutant α -amylase obtained by introducing a mutation into SEQ ID NO:1,

wherein said mutation consists of:

the substitution of an amino acid residue selected from the group consisting of: 167th Gln and 169th Tyr with another amino acid, ~~respectively~~.

31. (Currently Amended) A mutant α -amylase obtained by introducing a mutation into SEQ ID NO:1,

wherein said mutation consists of:

the substitution of an amino acid residue selected from the group consisting of: 190th Asn and 209th Gln with another amino acid, ~~respectively~~.

32. (Currently Amended) A mutant α -amylase obtained by introducing a mutation into SEQ ID NO:1,

wherein said mutation consists of:

the substitution of an amino acid residue selected from the group consisting of: 167th Gln, 169th Tyr, 190th Asn, and 209th Gln with another amino acid, ~~respectively~~.

33. (Currently Amended) A mutant α -amylase obtained by introducing the following mutations ~~a mutation~~ into SEQ ID NO:1, ;

~~wherein said mutation consists of:~~

~~the substitution of an amino acid residue selected from the group consisting of: 107th Met, 167th Gln, 169th Tyr, 190th Asn, and 209th Gln with another amino acid, respectively.~~

34. (Currently Amended) A mutant α -amylase obtained by introducing the following mutations ~~a mutation~~ into SEQ ID NO:1, ;

~~wherein said mutation consists of:~~

~~the substitution of an amino acid residue selected from the group consisting of: 49th Asn, 107th Met, 167th Gln, 169th Tyr, 190th Asn, and 209th Gln with another amino acid, respectively.~~

35. (Currently Amended) A mutant α -amylase obtained by introducing the following mutations ~~a mutation~~ into SEQ ID NO:1, ;

~~wherein said mutation consists of:~~

~~the substitution of an amino acid residue selected from the group consisting of: 49th Asn, 107th Met, 205th His, 167th Gln, 169th Tyr, 190th Asn, and 209th Gln with another amino acid, respectively.~~

36. (Previously Presented) The mutant α -amylase according to claim 30, wherein the 167th Gln is substituted with Glu, and wherein said 169th Tyr is substituted with Lys.

37. (Previously Presented) The mutant α -amylase according to claim 31, wherein the 190th Asn is substituted with Phe, and wherein said 209th Gln is substituted with Val.

38. (Previously Presented) The mutant α -amylase according to claim 32, wherein the 167th Gln is substituted with Glu, the 169th Tyr is substituted with Lys, the 190th Asn is substituted with Phe, and wherein said 209th Gln is substituted with Val.

39. (Previously Presented) The mutant α -amylase according to claim 33, wherein the 107th Met is substituted with Leu, the 167th Gln is substituted with Glu, the 169th Tyr is substituted with Lys, the 190th Asn is substituted with Phe, and wherein said 209th Gln is substituted with Val.

40. (Previously Presented) The mutant α -amylase according to claim 34, wherein the 49th Asn is substituted with Ser, the 107th Met is substituted with Leu, the 167th Gln is substituted with Glu, the 169th Tyr is substituted with Lys, the 190th Asn is substituted with Phe, and wherein said 209th Gln is substituted with Val.

41. (Previously Presented) The mutant α -amylase according to claim 35, wherein the 49th Asn is substituted with Ser, the 107th Met is substituted with Leu, the 167th Gln is substituted

with Glu, the 169th Tyr is substituted with Lys, the 190th Asn is substituted with Phe, the 205th His is substituted with Arg, and wherein said 209th Gln is substituted with Val.

42. (Currently Amended) A mutant α -amylase obtained by introducing the following mutations ~~a mutation~~ into SEQ ID NO:1;

~~wherein said mutation consists of:~~

~~the substitution of an amino acid residue selected from the group consisting of:~~ 167th Gln, 169th Tyr, 190th Asn, and 209th Gln with Glu, Lys, Phe, and Val, respectively, and

the substitution of ~~an amino~~ N-amino terminal sequence from 1st Asp through 19th Gly of SEQ ID NO:1 with an amino acid sequence from 1st His to 21st Gly of SEQ ID NO:2.

43. (Currently Amended) A mutant α -amylase obtained by introducing a mutation into SEQ ID NO:1,

wherein said mutation consists of:

the substitution of an amino acid residue selected from the group consisting of: 144th Ser, 190th Asn, and 209th Gln with another amino acid, ~~respectively~~.

44. (Previously Presented) The mutant α -amylase according to claim 43, wherein the 144th Ser is substituted with Pro, the 190th Asn is substituted with Phe, and wherein said 209th Gln is substituted with Val.

45. (Currently Amended) A mutant α -amylase obtained by introducing a mutation into SEQ ID NO:1,

wherein said mutation consists of:

the substitution of an amino acid residue selected from the group consisting of: 16th Glu, 144th Ser, 190th Asn, and 209th Gln with another amino acid, ~~respectively~~.

46. (Currently Amended) The mutant α -amylase according to ~~claim 44~~ claim 45, wherein the 16th Glu is substituted with Pro, the 144th Ser is substituted with Pro, the 190th Asn is substituted with Phe, and wherein said 209th Gln is substituted with Val.

47. (New) A mutant α -amylase obtained by introducing between 1 and 12 mutation(s) into SEQ ID NO:1, wherein said mutation(s) consists of:

the substitution of an amino acid residue selected from the group consisting of: the 11th Tyr, 16th Glu, 49th Asn, 84th Glu, 144th Ser, 167th Gln, 169th Tyr, 178th Ala, 188th Glu, 190th Asn, 205th His and 209th Gln, with another amino acid, and optionally an additional substitution of an amino acid residue at 107th Met with another amino acid residue.